

# Vermont Forest Health

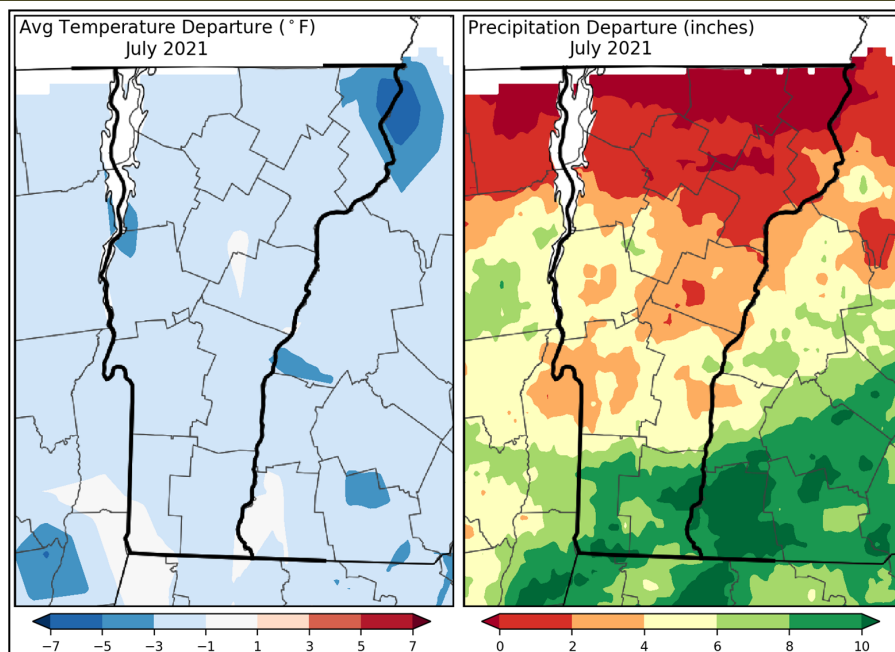
## Insect and Disease Observations — July 2021

Department of Forests, Parks & Recreation  
July 2021

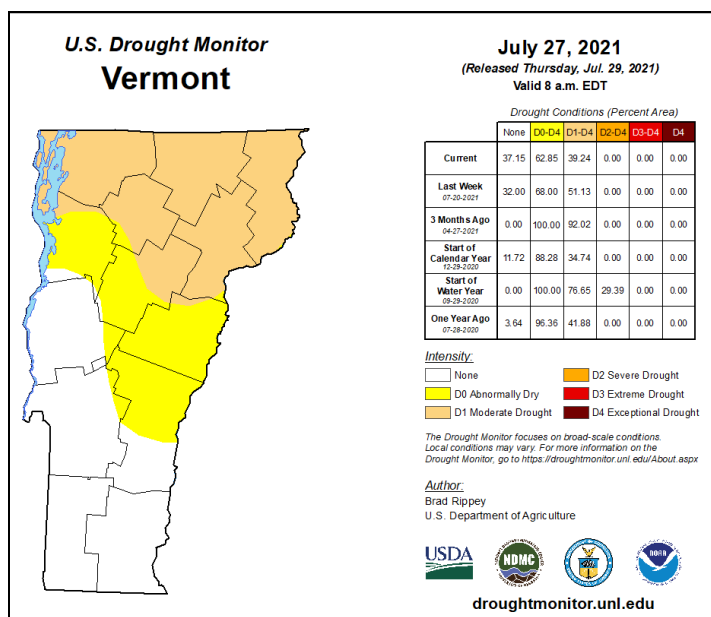
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### Weather Recap

The end of July marks the end of the first full month of summer. On average, this month was colder and wetter than July of 2020. State-wide temperatures averaged 65.1 °F, which was 5.8 degrees cooler than July of last year. Statewide precipitation averaged 7.51 inches, which was 3.46 inches more than July of last year. During the first two weeks of July, central and southern Vermont experienced between 100 and 300% more rainfall than historically normal.



Temperature and precipitation departure from normal. Maps and data: [Northeast Regional Climate Center](http://NortheastRegionalClimateCenter.com).



Where present, this beneficial rainfall has helped to reduce drought severity in most parts of the state, however, northern Vermont continues to receive little rainfall and remains in drought conditions. Starting July 6th, the U.S. Drought Monitor listed 61.14% of the state in moderate drought, 21.87% as abnormally dry, and 16.99% as no drought. By the end of July, drought severity decreased in most of Vermont, with listings being updated to 39.24% of the state in moderate drought, 23.61% as abnormally dry, and 37.15% as no drought.

End of July drought conditions. Map and data: [U.S. Drought Monitor](http://U.S.DroughtMonitor.com).

## LDD Moth Update

The feeding window for the invasive LDD caterpillars (gypsy moth, *Lymantria dispar dispar*) is wrapping up this month. LDD caterpillars pupate in cocoons, which can be found in a variety of protected habitats including bark crevices, stone walls, as well as picnic tables and vehicle wheel wells. The LDD pupa stage lasts between 10-14 days, after which time, caterpillars transform into adult moths.



LDD pupae. Photo credit: Milan Zubrik, Forest Research Institute.

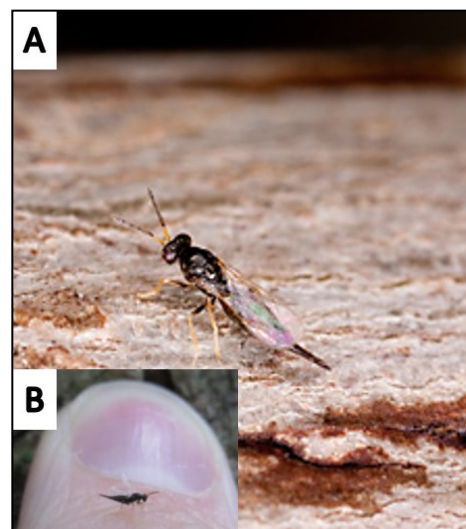


Each adult moth lives an average of two to three days, however due to the large population, heavily infested areas may maintain a swarm for two to three weeks. Adults mate and female LDD moths lay a single egg mass containing between 200-1000 eggs. These egg masses are often laid near pupation sites, but can also be laid on a variety of other outdoor items including camping gear and firewood.

LDD adult females laying eggs. Photo credit: FPR Staff.

## EAB Update: Biocontrol Release

Vermont Department of Forests, Parks & Recreation and the Agency of Agriculture continues to release emerald ash borer (EAB, *Agrilus planipennis*) biocontrols, *Tetrastichus planipennisi* (2020, 2021), *Oobius agrili* (2021) and *Spathius galinae* (2021). These small, non-stinging wasps are being released at LR Jones State Forest in Plainfield, and on a property in South Hero. The parasitoids were produced and supplied from, the USDA's Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ) EAB Parasitoid Rearing Facility in Brighton, MI. These parasitoid wasps are only 3-4 mm long, are incapable of stinging humans, and specifically parasitize either EAB larvae or EAB eggs. As the eggs hatch, they consume the EAB larvae and eggs from the inside out. Due to their smaller size these biocontrols are best suited for ash trees that are four inches in diameter or less, as it cannot penetrate the bark of larger trees to reach EAB larvae. FPR plans to release more parasitic wasp species across all counties in the coming years. This statewide presence of biocontrol agents will help regulate EAB populations, which will in turn prolong the life of Vermont's ash trees. For more information about EAB and how to report a sighting, please visit [VTInvasives](https://www.vermont.gov/info/000001234).



**A:** *T. planipennisi*. Photo credit: Bill McNee, WI DNR.

**B:** *T. planipennisi* on finger for scale. Photo credit: Stephen Ausmus, USDA Forest Service.



## Other Observations



Saddled prominent (*Heterocampa guttivitta*) caterpillars can be observed feeding throughout the state this month. This native caterpillar prefers to feed on American beech and sugar maple, however, they will feed on other hardwood species. In high populations, this caterpillar can be identified by listening to the sound of "raining frass" when walking around hardwood forests.

Saddled prominent caterpillar.  
Photo credit: FPR Staff.

Goblet waxcap mushrooms (*Hygrocybe Cantharellus*) were observed growing out of leaf litter and fallen logs after the recent heavy rains. This small mushroom has a reddish-orange to orange cap that is 6-20 mm across and is broadly convex. Its slender stem is 30-70 mm long and 2-4 mm thick and is orange in color. This mushroom's gills are decurrent (gills run down the stem) and are pale yellow with a white spore print.

Goblet waxcap mushrooms. Photo credit: Melissa Bochte, [Mushroomexpert](#).



Galls caused by balsam gall midge. Photo credit: R. Kelley.

Balsam gall midge (*Paradiplosis tumifex*) was observed feeding on balsam fir in Victory State Forest. Larvae feed on the base of living needles, which causes galls (abnormal growth) to develop where they feed. These insects develop in the newly formed galls, which protect them from environmental stressors and predators. Needles with galls can drop prematurely, something that causes minimal damage to forest trees, however, can become an issue for Christmas tree growers.

Upright coral mushrooms (*Ramaria stricta*) were observed growing out of dead wood in Coolidge State Park. This mushroom is 4-14 cm tall, 4-10 cm wide, and is comprised of a cluster of vertical branches. These branches are yellowish and becomes orangish as it matures. When bruised or damaged, this mushroom discolors a purplish brown. This mushroom has numerous varieties and is likely representing an entire group of fungi that have not been morphologically and phylogenetically described.



Cluster of upright coral mushrooms. Photo credit: A. Khitsun.





Early signs of maple leaf cutter (*Paraclemensia acerifoliella*) damage has been reported across the state this month. This insect is often found on sugar maples, although it will feed on other hardwoods such as red maple, beech, and birch species. In its caterpillar stage, these insects excise circular holes in the leaf, which are then bound together with silk with the larvae inside.

Maple leaf cutter damage. Photo credit: FPR Staff.

Oak shothole leaf miner (*Japanagromyza viridula*) damage was observed on red oak in Essex County this month. This is a very small fly species that feeds on new leaves and mature buds of oak. These insects feed by making small holes using their ovipositor, and lapping up the secreted fluids. Once the injury dries out, it turns brown and falls out leaving behind a tiny circle. These small holes expand in size as the leaf matures. On young trees, this can cause a reduction in photosynthesis which can lead to dieback but does not cause dieback in larger, more mature trees.



Oak shothole leaf miner damage Photo credit: Jody Gordon.



Inky cap mushrooms (*Coprinopsis atramentaria*) have been observed in mulch beds following periods of heavy rainfall. These short lived mushrooms get their name by liquefying their gills to assist in spore dissemination (a process known as deliquescence). This mushroom contains the mycotoxin coprine, which makes it poisonous when ingested within three days of (before and after) consuming alcohol.

Cluster of inky caps. Photo credit: Maynard Wheeler, Messiah College.

Invasive jumping worms (*Amyntas agrestis*, *Amyntas tokionensis*, and *Metaphire hilgendorfii*) continue to be reported in residential gardens this month. These non-native earthworms are a glossy dark gray-brown color and have a white-grey clitellum. When these worms are handled, they violently thrash around, and in the process, can lose their tails. Watch these worms jump and thrash in this video. These worms rapidly break down organic matter which can lead to increased erosion, decreased nutrients, and reduced regeneration in forested stands. For more information, or to report a sighting, please visit VTinvasives.



Invasive jumping worm. Photo credit: Wisconsin DNR.





Witch hazel cone gall aphid (*Hormaphis hamamelidis*) damage was observed on witch hazel shrubs in Addison county. This insect creates conical leaf galls that turn red as the season progresses. These insects have three to seven generations per year depending on elevation and use witch hazel shrubs and river birch trees as hosts.

Witch hazel cone gall aphid. Photo credit: David Stern, [theScientist](#).

Japanese beetles (*Popillia japonica*) continue to cause damage in gardens and on ornamental trees throughout the state. This invasive beetle feeds on more than 300 plant species, causing skeletonized leaves (eats all plant tissue between leaf veins) on infested hosts. The beetles overwinter as grubs in the soil, where they cause damage to plant roots.



Japanese beetles. Photo credit: [Ohio State University](#).



Oak anthracnose, caused by the fungal pathogen *Apiognomonia errabunda*, was observed in southern Vermont following periods of heavy rainfall. This pathogen causes browning of leaf tissue around the margins (edges) and veins of oak leaves. Although not commonly associated with large-scale dieback or mortality, heavily infected trees may have light dieback and premature leaf drop.

Anthracnose infected leaves. Photo credit: Duane Gissel, Scott County Extension.

A golden digger wasp (*Sphex ichneumoneus*) was observed digging in sandy soils in southern Vermont. These wasps lay their eggs in underground tunnels inside of captured prey. These solitary wasps paralyze captured insects and store them within the tunnels. The wasp then lays eggs inside of the insect, and as the larvae hatch and grow, they consume and kill the paralyzed insect. These wasps are not aggressive and can help maintain your garden, by aerating the soil, pollinating flowers, and catching grasshoppers.

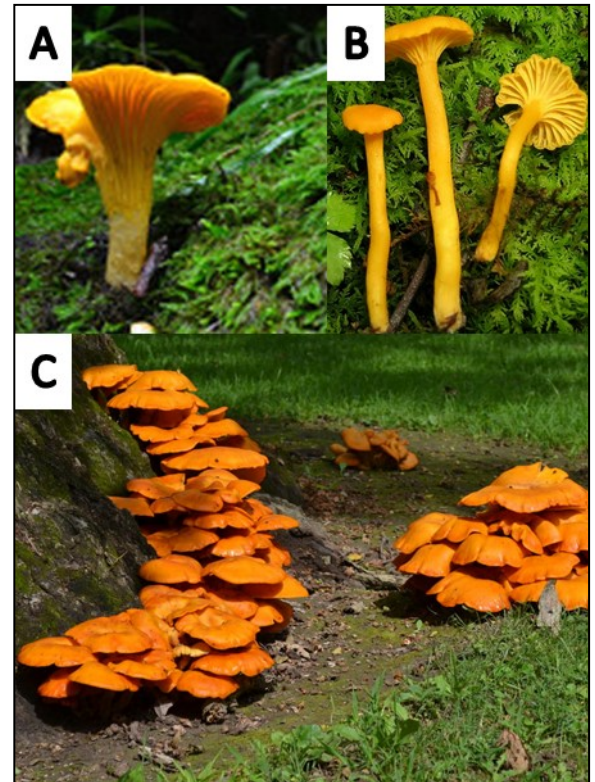


Golden digger wasp. Photo credit: Bill Meier, [BugGuide](#).



## Foraging For Fungi

Chanterelle mushrooms (*Cantharellus* spp.) are in season in most parts of the state. This native edible fungus is pale-yellow to deep-orange in color and has a funnel shape. The cap of this mushroom is 3-10 cm wide and has a wavy and irregular margin. The underside of the cap has false gills, which partially run down the stem of the mushroom and cannot be picked off and separated from the cap. Its stem is the same color or slightly paler than the cap and is 2- 4 in tall. These mushrooms grow directly out of the soil and are ectomycorrhizal, meaning that they have a symbiotic relationship with trees. These mushrooms grow individually and are found growing out of the soil. These mushrooms have a poisonous look alike, Jack o' lantern mushrooms (*Omphalotus illudens*). These mushrooms are saprotrophic, and is often found growing in clumps out of decaying stumps and roots. This toxic mushroom has an orange cap that is 3-20 cm wide that is flat to narrowly vase-shaped. The cap will turn green with KOH. Under the cap, orange gills run down the stem, which can be picked off and separated from the cap and gives off a white to pale yellow spore print.



**A-B:** Chanterelle mushrooms. Photo credit: Michael Kuo, [mushroomexpert](#). **C:** Jack o' lantern mushrooms. Photo credit: Michael Kuo, [mushroomexpert](#).



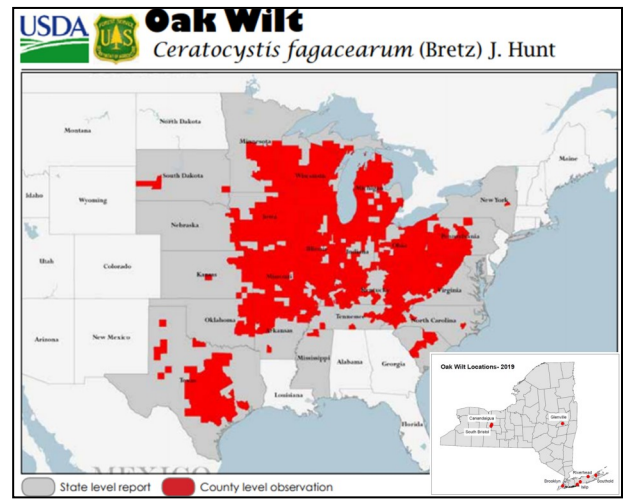
Loose cluster of black trumpets. Photo credit: Michael Kuo, [mushroomexpert](#).

Black trumpets (*Craterellus fallax*) are another sought-after edible that starts to show up in late July. This mushroom doesn't have a clearly defined cap and stem but is deeply vase-shaped and thin-fleshed. It is between 1-5 cm wide and 3-9 cm tall. The upper (inner) surface is grey-black to black and is finely scaled. The under (outer) surface is smooth to lightly wrinkled. This surface is typically black but will turn yellow-orange as it matures. This mushroom has a pale pink-orange spore print. This mushroom is mycorrhizal and is often found growing individually or in loose clusters in beech and oak-dominated forest type. This is reported as a choice edible, although its dark color makes it hard to find. Due to its unique color and shape, this mushroom has no reasonable look-a-likes.

As with all wild mushrooms, there are risks to eating and misidentifying them which can be both dangerous and fatal. Always ensure you have the correct identification before consuming any wild edible. **The State of Vermont accepts no liability or responsibility for the consumption and/or misidentification of any mushrooms mentioned in this publication.**

## Pests in the Spotlight: Oak Wilt

Oak wilt (*Bretziella fagacearum*) is a vascular tree disease of oak trees, which causes rapid decline and mortality in infected hosts. Due to the fast progression of this disease, it is thought to be introduced to the United States, however, its exact origin is unknown. This pathogen was first documented in Wisconsin in 1944 and has currently not been observed in Vermont. This pathogen has currently been reported in 22 states, with the most recent being in New York in 2008.



Symptomatic oak. Photo credit: Steven Katovich, [Bugwood](#).

Oak wilt can infect all species of true oaks (*Quercus* spp.), however, members of the red oak family are most susceptible to mortality after infection. This pathogen spreads large distances through a variety of bark and sap-feeding beetles as well as locally, through root grafts. Humans can expedite the spread by moving infected firewood, or transporting insect vectors.

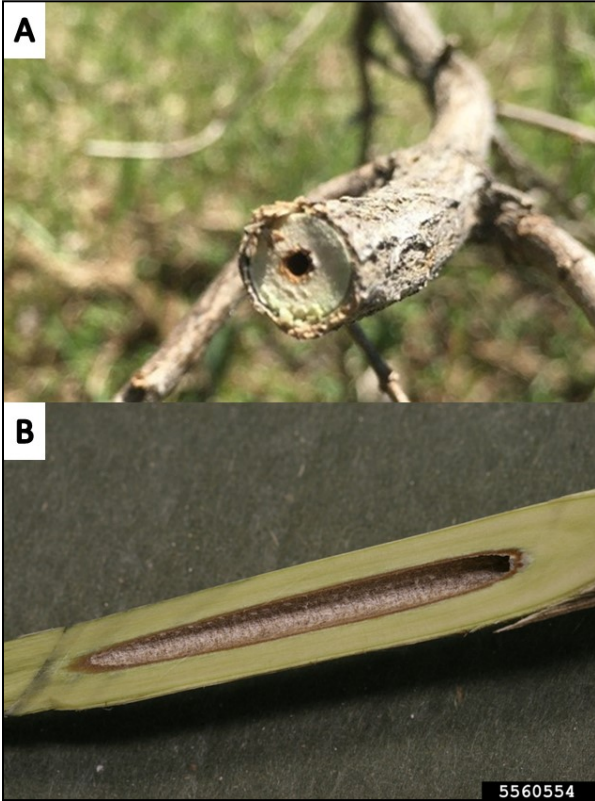
Early symptoms of this pathogen include wilted and discolored margins of leaves. This can lead to leaf drop during the growing season which gives infected trees a “fall-like” appearance. Cutting into the infected tree will show symptoms of xylem streaking, which is a symptom more commonly found with white oak family members. In red oak family members, fungal hyphal mats will develop under the bark of infected trees, which can lead to bark splitting. (This is uncommon for most white oak family members.) Over time, dieback and mortality will progress, with red oak family members having rapid onset and mortality which can happen over a single growing season, and white oak family members having a slower decline. For more information on oak wilt, or to report a sighting, please visit [VTinvasives](#).



A: Symptomatic red oak leaves. Photo credit: Minnesota DNR, [Bugwood](#). B: Xylem streaking. Photo credit: Utah State University, [Bugwood](#). C: Oak wilt hyphal mat. Photo credit: Joseph OBrien, USDA Forest Service, [Bugwood](#).



## Hybrid Invasive Species: Showy Honeysuckle



All four invasive honeysuckles have hollow/brown piths, while the locally evolved honeysuckles have solid/white piths. Photo credit: (A) FPR staff, (B) Chris Evans, University of Illinois, [Bugwood](#).

In New England, many members of the honeysuckle family (Caprifoliaceae) are present. According to the Online Etymology Dictionary, the term honeysuckle comes from Middle and Old English words indicating the action of sucking the nectar from tubular flowers (*honeysouke*, *hony soukil*) most likely a reference at first to red clover and eventually to vines and shrubs. In Vermont, you can find examples of the honeysuckle family, including locally evolved plants like fly honeysuckle (*Lonicera canadensis*), and bush-honeysuckle (*Diervilla lonicera*), and several species of the genus *Lonicera* that are considered invasive in Vermont, including amur honeysuckle (*L. maackii*), Morrow's honeysuckle (*L. morrowii*), and tatarian honeysuckle (*L. tatarica*). Also present is a hybrid crossed from Morrow's and tatarian honeysuckle that escaped cultivation – showy honeysuckle (*Lonicera x bella*).

The genus *Lonicera* contains shrubs and vines, but the more common invasive honeysuckles in Vermont are woody shrubs. The leaves are arranged oppositely and are generally oval-shaped with a rounded or pointed tip. Honeysuckle flowers and fruits are also similar in appearance and occur twinned from the leaf axils. These plants are all fairly tall, reaching upwards of 8' - 20' in height.

While tatarian was introduced to the United States in 1845 and Morrow's in 1860, there isn't a clear picture of how showy honeysuckle came to be, or exactly when/where it was introduced in the United States. It is understood that the hybrid was a cultivated cross, but it is also possible that the hybrid occurs spontaneously in North America where the parent species co-occur. Identification is complicated because the hybrid hosts traits that overlap with both parent species. In fact, it was discovered that a fair number of botanical records for the parent species were misidentified samples of showy honeysuckle. In some states, it is believed that showy honeysuckle may be more prevalent than either parent species.

Both of Vermont's locally evolved honeysuckles (fly and bush-honeysuckle) are widely distributed across the state, and at a glance, offer similar



The hybrid showy honeysuckle is a tall shrub with white to pink flowers which turn yellow as they wither. Photo credit: Leslie J. Mehrhoff, University of Connecticut, [Bugwood](#).



characteristics as the invasive honeysuckles. To differentiate those from the invasive honeysuckles, break off a branch of older growth (indicated by the shaggy, brown-grey bark) to observe the center of the stem (pith). The fly and bush-honeysuckles have a solid white pith, whereas all the invasive shrub honeysuckles have brown, hollow piths. Other distinguishing features to differentiate include looking at the leaves --- those of the bush-honeysuckle have a serrated leaf edge while the invasives' have a smooth edge; fly honeysuckle leaves have a smooth texture and the growth form is much smaller and less dense. Some other plants that may be confused for invasive honeysuckles include common snowberry, border privet (also invasive), and dogwoods (red-osier, silky, grey). These plants all have oppositely arranged leaves and can be found in the understory of Vermont woods.

Here are a few ways to distinguish the invasive honeysuckles from each other:

### **Leaf shape**

- Amur honeysuckle ranges from elliptic to ovate to lanceolate with a long tapered tip.
- Morrow's honeysuckle ranges from oval to elliptic to ovate with a blunt pointed tip.
- Tatarian honeysuckle ranges from ovate to oblong with blunt pointed tip.
- Showy honeysuckle is typically ovate with a blunt pointed tip.

### **Leaf hairs on the lower surface**

- Amur honeysuckle is pubescent (hairy).
- Morrow's honeysuckle is densely pubescent.
- Tatarian honeysuckle is glabrous (lacks hairs).
- Showy honeysuckle is slightly pubescent.

### **Flower color and fruit**

- Amur honeysuckle flowers are white fading to yellow turning to dark red fruit.
- Morrow's honeysuckle flowers are white fading to yellow turning to red fruit.
- Tatarian honeysuckle flowers range from white to pink and don't fade to yellow, the fruit is red and occasionally orange or yellow.
- Showy honeysuckle flowers range from white to pink fading to yellow turning to somewhat red.

### **Plant height**

- Amur honeysuckle is up to 15'+ tall.
- Morrow's honeysuckle is 8'+ tall.
- Tatarian honeysuckle is 10' tall.
- Showy honeysuckle is up to 20' tall.

These invasive shrubs can be found across Vermont, but the hybrid may be under-reported because of the similarities with the parent species, and the potential of hybridization occurring in the wild may make differentiation using morphological characteristics even harder.



Comparison of hybrid and parent species of honeysuckle. Left to Right: Morrow's, showy, and tatarian honeysuckle leaves and flowers. Photo credit: Leslie J. Mehrhoff, University of Connecticut, [Bugwood](#).

All four invasive shrubs grow densely in the understory of forests or along fields and forest edges, which shades out and excludes locally evolved plants, and changes habitat and food resources for wildlife. Though the physical structure of the shrubs can provide habitat and the fruit is plentiful, neither are ideal for wildlife – with the lower branching nature making predation easier on nesting birds, and the fruit lacking nutrition needed by locally evolved birds and mammals. These negative impacts are why amur, Morrow’s, tatarian, and showy honeysuckle are listed as Class B Noxious Weeds in Vermont.

To learn more about invasive honeysuckles, check out [VTinvasives.org](https://vtinvasives.org) and these additional resources:

- [Woody Invasives of the Great Lakes Collaborative](#)
- [Minnesota Wildflowers](#)
- [Minnesota Department of Agriculture](#)
- [Penn State Shady Invaders NPN Campaign](#)

### Invasive Plant Phenology

In the second full week of every month, volunteers around the state record and report invasive plant phenology, creating both a timely resource for best management options and a historic record of plant behavior. The observations below are from July 12-16, 2021. If you would like to be involved in this effort, please contact [Pauline.Swislocki@vermont.gov](mailto:Pauline.Swislocki@vermont.gov). Observers are still needed in Bennington, Essex, Franklin, Rutland, Washington, Windham, and Windsor counties. For more information about the phenology of invasive plants in Vermont, [check out Bud Buds](#), a podcast from the Invasive Plant Program.

**Caledonia County** – Leaf Out: Asiatic bittersweet; common reed; Japanese knotweed; Fruit Forming: glossy buckthorn; Fruit Ripening: common barberry; common buckthorn; glossy buckthorn; shrub honeysuckles.

**Chittenden County**— Leaf Out: Asiatic bittersweet; common barberry; common buckthorn; common reed; glossy buckthorn; goutweed; Japanese barberry; Japanese knotweed; multiflora rose; shrub honeysuckles; wild parsnip; Flowering: garlic mustard; purple loosestrife; spotted knapweed; wild parsnip; Fruit Forming: common barberry; common buckthorn; garlic mustard; glossy buckthorn; goutweed; multiflora rose; shrub honeysuckles; wild parsnip; Fruit Ripening: common barberry; common buckthorn; garlic mustard; glossy buckthorn; goutweed; shrub honeysuckles; Fully Seeded: garlic mustard.

**Grand Isle** – Leaf Out: Asiatic bittersweet; common buckthorn; garlic mustard; Japanese barberry; Japanese knotweed; Flowering: wild parsnip; Fruit Forming: common buckthorn; garlic mustard; multiflora rose; shrub honeysuckles; Fully Seeded: garlic mustard.

**Orange** – Fully seeded: shrub honeysuckles.

**Washington** – Leaf Out: wild parsnip; Flowering: wild parsnip; Fruit forming: wild parsnip.



<b>For more information, contact the Forest Biology Laboratory at 802-505-8259 or:</b>	Windsor & Windham Counties.....	Springfield (802) 289-0613
	Bennington & Rutland Counties.....	Rutland (802) 786-0060
	Addison, Chittenden, Franklin & Grand Isle Counties.....	Essex Junction (802) 879-6565
	Lamoille, Orange & Washington Counties.....	Barre (802) 476-0170
	Caledonia, Orleans & Essex Counties.....	St. Johnsbury (802) 751-0110